II. Non-Art Rejections.

In paragraphs (2)-(5) of the Office Action, claims 26-44 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

The Applicant has amended most of the claims to overcome some of these rejections; however, the Applicant traverses others of the rejections.

With regard to the rejection in paragraph (3) relating to the use of the phrase "trace", the Applicant respectfully traverses this rejection. The phrase "trace" is used as a verb in the claims and is grammatically correct. There is no need nor legal requirement for the Applicant to further define the phrase. Indeed, the Applicant asserts that the handwritten input as used in the claimed invention may be either freestyle handwritten input or restricted handwritten patterns or any other type of handwritten input.

With regard to the rejection in paragraph (4) relating to the structural relation between the means for displaying an expression and means for displaying a result, the Applicant respectfully traverses this rejection. The functional relation between the two means for displaying is clearly set forth in the claim, and more specifically, the two means are indirectly related as one displays expressions and the other displays results of the performed expressions. As described in the specification, the preferred embodiment of the Applicant's invention uses a general-purpose microprocessor to execute the

software that provides most of the calculator's functionality, although special-purpose circuits or microprocessors (e.g., neural networks, ASICs, etc.) may also be used. Each of the cited means in Applicant's claim 27 comprises a different functional portion of the software executed by the microprocessor, and thus are correctly claimed as separate means. Thus, the Applicant respectfully submits that there is no legal requirement for the further definition of the relation between the means.

III. Prior Art Rejections.

A. The Office Action Rejections.

In paragraphs (6)-(2) of the Office Action, claims 26-44 were rejected under 35 U.S.C. § 103 as being obvious in view of the combination of the Inagaki and Bonadio references. The Office Action states that Inagaki teaches the invention substantially as claimed, but admits that Inagaki does not specifically show the simultaneous display of the mathematical result and mathematical expression. However, the Office Action contends that Bonadio discloses the mathematical expression simultaneously displayed with the mathematical result. The Office Action states that it would have been obvious to combine the teachings of the two references to show the Applicant's invention.

The Applicant respectfully traverses these rejections in light of the arguments set forth below.

B. The Applicant's Claimed Invention.

The Applicant's invention as recited in independent claims 26, 27, and 36, comprises a calculator that recognizes handwritten input, wherein the calculator has a display screen covered by a touch sensitive surface and a processing circuit, coupled to the display screen and the touch sensitive surface, for recording movements of a pointing member as it traces across the touch sensitive surface of the display screen, for recognizing the recorded movements of the pointing member as characters, for converting the characters into one or more mathematical expressions comprised of operands and operators, for displaying the mathematical expressions on the display screen, for performing calculations indicated by the operands and operators in the displayed mathematical expressions, and for displaying a result of the performed calculations on the display screen.

C. The Inagaki Reference.

Inagaki discloses a calculator having a display section and a separate key array. The calculator uses the key array for recognizing handwriting input. A user runs his finger over the key array in the form of a symbol, and the calculator recognizes the symbol and enters it as if the corresponding button was pressed.

D. The Bonadio Reference.

Bonadio discloses a method and apparatus for providing interactive mathematical manipulation on a computer system. An equation or group of equations is initially typed in by a user on a keyboard, and are then displayed on a separate monitor. Manipulations of the equations previously entered via the keyboard and displayed on the monitor may be effected by using a mouse.

E. The Applicant's Independent Claims 26, 27, and 36 as Compared to the Inagaki and Bonadio References.

The Applicant points out that independent claims 26, 27, and 36 disclose a novel and non-obvious calculator for recognizing handwritten calculations. The claimed invention includes a display screen covered by a touch sensitive surface and means for recognizing handwritten input traced across the touch sensitive surface of the display screen, wherein the handwritten input comprises one or more mathematical expressions and the mathematical expressions are comprised of operators and operands. These elements of the Applicant's invention are not anticipated nor rendered obvious by the Inagaki or Bonadio references.

For example, Inagaki teaches a calculator having a display section and a key array, and the step of using the key array for recognizing handwriting input. A user runs his finger over the key array in the form of a symbol, and the calculator recognizes the symbol and enters it as if the corresponding button was

pressed. However, there is no teaching in Inagaki related to Applicant's invention of recognizing handwritten input traced across a touch sensitive surface covering a display screen, wherein the handwritten input comprises one or more mathematical expressions and the mathematical expressions are comprised of operators and operands.

Similarly, Bonadio teaches the entry of an equation by typing on a keyboard, and then displaying the equation on a separate monitor. However, there is no teaching in Bonadio related to Applicant's invention of recognizing handwritten input traced across a touch sensitive surface covering a display screen, wherein the handwritten input comprises mathematical expressions.

Apart from these differences, there is no basis for combining Inagaki and Bonadio and then modifying the combined references to disclose an invention as set out in Applicant's independent claims. Combining Inagaki and Bonadio would result in system wherein an equation is initially entered by a user running his finger over the keyboard in the form of each symbol of the equation, the system recognizing the symbols, the system displaying the equation on a separate monitor or other display device, and the system allowing manipulations of the entered equations using a mouse.

However, there is still no teaching or suggestion in the combined references of recognizing handwritten input traced across a touch sensitive surface covering a display screen,

wherein the handwritten input comprises a mathematical expression. Indeed, the combined references would have to be modified in order to accomplish the teachings of the Applicant's invention.

Moreover, it would only be with hindsight for the Office to maintain that such a modification could be made to the combination. Obviousness cannot be established by modifying the teachings of the prior art to produce the Applicant's claimed invention, absent some teaching, suggestion or incentive supporting the modification. Clearly, neither the Inagaki nor the Bonadio references teach, suggest or disclose an incentive for modifying their respective systems, or the combination thereof, to accomplish the Applicant's invention.

The Applicant was the first to conceive of the novel calculator as set out in independent claims 26, 27, and 36, and as such, the Applicant has achieved a significant advance in the field of pen-based computers and personal digital assistants (PDAs), i.e., the Applicant's invention is the world's first pen-based calculator. As such, the Applicant is entitled to issuance of the claims in their present state.

F. The Applicant's Dependent Claims 28-35 and 37-44 as Compared to the Inagaki and Bonadio References.

In addition to the differences noted above, the Applicant submits that the dependent claims 28-35 and 37-44 also recite novel physical features which patentably distinguish over the

references under 35 U.S.C § 103.

With respect to claims 28, 29, 37, and 38, Bonadio teaches the entry of numbers via the keyboard, but not through handwritten input. Further, Inagaki teaches the entry of digits one at a time, and thus there is no issue related to the recognition of relative placement of the digits. As a result, neither reference teaches nor suggests recognizing numbers from a relative placement of the handwritten digits, so that when the digits are traced horizontally in close proximity to one another on the touch sensitive surface of a display screen, they are considered to be a single number (claims 28 and 37). In addition, neither reference teaches nor suggests recognizing mathematical expressions traced horizontally and vertically on the touch sensitive surface of a display screen (claims 29 and 38).

With respect to claims 30 and 39, Inagaki teaches the calculation of formula when the CAL key is actuated after the formula is written, but not through the tracing of a result operator on the touch sensitive surface of a display screen.

With respect to claims 31 and 40, Bonadio teaches the animation of a user action on the screen as a mouse button is depressed and the animation of a graph, but not the animation of expressions on the display screen as they are being calculated.

With respect to claims 32 and 41, Bonadio teaches the manipulation of equations using a mouse, but not the step of accepting of corrections in the mathematical expressions, wherein

the corrections are traced on the touch sensitive surface of a display screen.

With respect to claims 33 and 42, Bonadio teaches the labeling of equations to identify the source of an equation, but not the step of accepting of marks traced on the touch sensitive surface of a display screen to annotate and label the recorded movements.

With respect to claims 34 and 43, Bonadio teaches insertion into mathematical expressions using a mouse, but not the step of accepting of insertions in the mathematical expressions, wherein the insertions are traced on the touch sensitive surface of a display screen.

With respect to claims 35 and 44, Bonadio teaches deletion from mathematical expressions using a mouse, but not the step of accepting of deletions in the mathematical expressions, wherein the deletions are traced on the touch sensitive surface of a display screen.

As indicated above in conjunction with the independent claims, the combined references would have to be modified further in order to accomplish the teachings of the Applicant's invention, and it would only be with hindsight for the Office to maintain that such a modification could be made to the combination. Neither the Inagaki nor the Bonadio references teach, suggest or disclose an incentive for modifying their respective systems to accomplish the Applicant's invention as recited in the dependent claims. The Applicant was the first to

conceive of the novel pen-based calculator as set out in the dependent claims, and as such, the Applicant has achieved even further advances in the field of pen-based calculators.

IV. Conclusion.

In view of the amendments and arguments, it is submitted that the Examiner should withdraw the rejections under 35 U.S.C. §§ 103 and 122, after reconsideration. Moreover, it is submitted that this application is now in good order for allowance and such action is earnestly solicited.

Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call the below-signed attorney.

Respectfully submitted,

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Dated: Dec. 13, 1995 By: _____
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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231
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